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Powell, Thomas Carr

“Airplanes and terminals”

[S.I.]

[1928]

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"AIRPLANES AND TERMINALS"

ADDRESS BEFORE

THE WESTERN RAILWAY CLUB

HOTEL SHERMAN
CHICAGO. ILLINOIS

MAY 7, 1928

BY

T. C. POWELL
PRESIDENT, CHICAGO AND EASTERN ILLINOIS
RAILWAY COMPANY

$$6261' \approx 1.7 \times 10^4$$

Before

"AIRPLANES AND TERMINALS"

Mr. Chairman and Members of The Western Railway Club and Guests:

Never having been in an airplane or even in a balloon, I cannot qualify as an aviator.

Responding to my name this evening, I can simply record some of my impressions. That is to say, like the United States representatives attending the sessions of the League of Nations, I can qualify only as an interested "observer".

PROFESSOR LANGLEY.

I remember very well seeing a number of times the houseboat used by Professor Langley in his experiments on the Potomac River. The change in the sentiment of the Country and of Congress respecting aviation is well illustrated by comparing the niggardly and inadequate appropriations for Professor Langley's investigations with the generous provisions in recent legislation in the interest of commercial and military aviation. Incidentally, I was told by the brother of Professor Langley that the latter had constructed an engine with the

lowest weight per horsepower that had been built up to that time. Much more could have been accomplished by Professor Langley had Congress appropriated a reasonable amount to assist him or had private parties come forward to encourage him. An illustration of this is found in the most recent devices installed on battleships; namely, an improved catapult, using gun powder as a motive force in place of the springs used by Professor Langley.

DIRIGIBLE BALLOONS.

In 1906, I attended the St. Louis Balloon Meet, and I saw one of the first balloons which, equipped with a motor and a rudder, fought its way against a strong head wind, and I had to refer to the dictionary to find out why this kind of balloon was called a "dirigible". A part of the day's entertainment was the dispatching of a number of spherical and pear-shaped balloons on their way to an endurance test, and I recall that when the time came for the French balloon to start there was considerable excitement, because the French balloonists rather resented the insistence of the Starting Committee upon the French balloon being ready according to schedule. I know that the spectators got the impression that in some countries at least, it was not customary to start balloons on time.

WRIGHT BROS. AIRPLANE.

A year or two later, while in Washington on business, I was invited to join several hundred others in grouping ourselves as near as possible to the airplane of the Wright Brothers which, it was hoped, would make a trial trip, but unfortunately the weather was not favorable.

A misty rain began to fall and a breeze sprang up, and

after waiting for half an hour or so, during which my new straw hat began to lose its natty appearance, we were told that the breeze was too strong and the trial flight would, therefore, be postponed. Perhaps it would be more correct to say that most of us got this information in a very indirect way, because the attendants paid no attention to the crowd, but after fussing with the airplane, finally moved off with it and left us standing there looking at the vacant lot.

Not long after this, a fatal accident occurred on the same field, and I happened to meet the newspaper photographer who had taken a picture of the casualty. He told me that his editor had directed him to keep his camera focused on the plane at all times, whether it was on the ground or in the air and not to be diverted by any outside event or accident, no matter how interesting, because the editor was so skeptical on the subject of aviation that he was convinced that sooner or later the plane would crash. Unfortunately, he was right in that instance.

BLERIOT'S FLIGHT ACROSS ENGLISH CHANNEL, JUNE, 1909.

In 1910, I was in England about ten months after Bleriot, in 1909, had flown across the English Channel. This was the first time that this particular feat had been accomplished, although various flights of equal length had been made in other directions over land.

The interest was so great that it had been arranged by the authorities to put Bleriot's monoplane on exhibition in London and to charge an admission fee, the proceeds to go to charity.

Mr. Gordon Selfridge (who, as you know, had been with Marshall Field and Company, in Chicago, and has established a great store in London) realizing the advertising value of the event, agreed to pay in cash the es-

timated receipts; namely, \$25,000, and to exhibit the airplane free of charge at his store.

His offer was accepted, and eighteen years ago I saw the plane that had made the first successful flight from the continent to England.

PRESIDENT ROOSEVELT AND HOXIE.

Subsequent to this, I attended another air meet in St. Louis, and saw President Roosevelt drive up to the ground and enter the airplane operated by pilot Hoxie of dirigible balloon fame.

Roosevelt had come up from Texas, and the morning's paper had contained a cartoon showing him as a trust buster; as a lion hunter; as striking terror into the hearts of "malefactors of great wealth"; as the hero of San Juan; and in several other of his activities, but the twelfth and last panel of the cartoon pictured him as rejecting the invitation to ride in an airplane.

This, of course, was the only thing needed to make him risk his life. We saw the plane rise, saw Roosevelt stand up in the front of the machine, holding onto one of the upright struts with one hand, waving his stove-pipe hat with the other; and then as the plane circled around a few hundred feet in the air, we saw Roosevelt suddenly sit down. But it was not until afterwards that we learned that Hoxie, who himself suffered a fatal accident a few months later, had said to the Ex-President, "Sit down, you fool, or you will kill both of us".

What I did hear, however, was the admiring comment of a tall roughly dressed man standing just behind me, who, as Roosevelt mounted into the sky, said, "Blankety blank his blank soul, I never voted for him before, but I sure will now".

ERIE RAILROAD.

I think the Erie Railroad was the first, if not the only road, to photograph a section of the country on either side of the right-of-way, while I was Vice President, for the purpose of aiding in industrial development. This stretch was about sixty-five miles long. It was remarkable how clearly the photograph set out the physical characteristics of the different locations within this stretch of country.

PROPERTY RIGHTS.

When Professor Langley began his investigations, men believed that the owner of property could exercise control from the surface down to the center of the earth and from the surface outwardly to the center of the universe, a point so far distant that astronomers have just decided that this center is somewhere in the Milky Way at a distance of about fifty-two thousand light years from the sun. (A light year is nearly six trillion miles.)

But when the aerial survey of the Erie Railroad track was made, these former impressions as to ownership of any such air rights had faded away, and by this time have practically disappeared. Perhaps the sole remnant of our former belief or private ownership of the space above property is the hope that airplanes may be restrained from coming so close to the ground as to be a definite menace to those who are compelled to stay on the ground. I have seen it stated that laws will be necessary to bring this about.

The father of a friend of mine was killed, while walking in his field, by an aviator who had come too close to the ground and within the last thirty days an irate property owner, shot at a plane which was being flown

in dangerous proximity, and wounded the passenger in the foot.

One railroad with which I was connected was compelled, in order to secure a right-of-way for an additional track, to buy the land and pay for the cost of taking off the corner of a building, but even this did not satisfy the owner, and he demanded damages because the passage of the trains diverted the attention of his employees and reduced their earning capacity, and the jury awarded heavy damages to cover the liability.

I wonder how many hours had been lost in the United States through the time spent in observing airplanes pass over or near the office buildings and manufacturing plants of the Country!

PUBLIC ATTITUDE TOWARD AVIATION.

How different the reception of the airplane has been to the reception of the first railways in England. Speaking before the House of Commons in opposition to the granting of a charter to the Liverpool & Manchester Railway, a little over one hundred years ago, one of the speakers said, in part,—

*"Was the House aware of the smoke and the noise, the hiss and whirl which locomotive engines passing at the rate of ten or twelve miles an hour would occasion? * * * Neither the cattle plowing in the fields nor grazing in the meadows would view them without dismay."*

Even the electric telegraph was opposed in this Country, and I recall reading that one of the vigorous opponents, after being convinced against his will, went down to defeat only after the following declaration,—

"I always have said and I always will say that even if you can send a message by telegraph, you never will be able to send a bale of cotton."

CO-ORDINATION OF TRANSPORT.

I will not undertake to follow through the development of the airplane, but the most recent expression of a public body, as indicating the position which the airplane now holds, is the finding of the Interstate Commerce Commission on the subject of motor truck and motor bus regulation (Docket 18300, April 10, 1926, Finding No. 26),—

"As far as practicable, there should be a definite co-ordination of all existing transportation agencies—land, water and air."

FREEDOM OF AVIATION FROM RESTRICTIONS.

Frankly, I don't know exactly what this will mean if it is carried out by direction of Congress, but I am wondering whether the aviators and the airplane companies appreciate their present freedom. Speaking from the standpoint of a railroad official, I should say that they must be in a state of perfect bliss in that they have,—

- No rate regulations.
- No taxes on the air through which they move.
- No automatic train control.
- No right-of-way fires.
- No costly grade separations.
- No charity appeals.
- No free passes.
- No War Department regulations to require that they shall maintain a certain height across navigable streams.
- No valuation expenses.
- No cross tie difficulties.
- No broken rails.
- No rough handling which cannot be blamed on the wind.
- No responsibility for the farmers' troubles.
- No argument with the coal operators.

On the other hand, they are encouraged to operate at the greatest speed possible; they are furnished free airports for their terminal facilities; they are furnished with signals protecting the airways at the expense of Government; and in the manner of advertising, they are furnished more free space in the newspapers than is given to anything else, except baseball, and usually the items occupy the front page.

AIRPLANES NOT A SUBSTITUTE.

I do not regard the airplane as a substitute for any method of transportation except the private automobile. The airplane is, in and of itself a fresh conception and a new means of transportation. It can be allied with the railroad train and with the commercial automobile; with the ocean steamer and with the warships and even with the submarine, but, in my opinion, it is not a substitute for any of these.

I believe that the present world record for the airplane is just over three hundred eighteen and a half miles per hour, or over five miles per minute, and new uses will be found for this extraordinary speed. These uses and the capacity of the plane itself will go hand in hand. They will never be widely separated, and as new uses are found the airplanes will be further developed, and as rapidly as a new capacity is created a new use will be found for that capacity.

It is an axiom in railroad transportation that facilities create traffic, and unless we conceive of aviation as a new feature of our life and without any close connection with other present methods of transportation, the development of aviation will be hampered. This will not always be through definite opposition but will be, if anything, the result of trying to connect a new matter with an old one.

AIRPLANE COMPETITION.

Now it is perfectly true that it is possible to set up competition between the airplane and the railroads; between the airplanes and the automobile; and between the airplanes and vessels.

For instance, the Southern Railway of England and the Nord Railway of France have completed plans for a service of five and one-half hours between London and Paris, reducing the present schedules by an hour and a half, and with the expectation that this new schedule will approximate the time it now takes for the trip by air if the automobile service at either end of the air route is also taken into account.

The fares by railroad and boat are practically the same as by automobile and airplane, but the distance, after all, is short, and I do not believe that in this Country similar conditions can be found.

I do believe, however, that the airplane will be a strong competitor of the private automobile, and to a substantial extent the airplane will continue to be substituted for the private automobile.

I thought it was rather significant that following a magazine article on aviation, the remainder of the column was filled out as follows:

"It is easy to fool yourself. It is more difficult to fool the people you work for. It is still more difficult to fool the people you work with, and it is almost impossible to fool the people who work under your direction." (Henry B. Thayer)

In considering this development, I am trying not to fool myself, and I hope that no one else will be fooled by what I have to say.

STATUS IN 1950.

It is a favorite occupation of some editors to dig up old predictions about railroads and steamships and show how short-sighted and ridiculous the predictions were. Nevertheless, some predictions are being made with respect to air transportation. I shall quote only those of reliable parties.

(a) Mr. H. D. Fokker, the Dutch airplane manufacturer, predicts that within two years one out of every one thousand Americans will use an airplane, and that at the end of two years the manufacture of airplanes will amount, annually, to one hundred and twenty thousand, and that the average price of light planes will be twelve hundred dollars or less.

(b) Captain Rickenbacker says that by 1950 the manufacture and operation of aircrafts will be the world's greatest industry.

(c) There will be fifty million automobiles in use in this Country within the next twenty years. (Captain Rickenbacker.)

Some doubt has been expressed as to whether the population of the United States will ever be more than two hundred million, but even at the present rate of increase we shall probably have, in 1950, a population of about one hundred and fifty million people—men, women and children. The fifty million automobiles will readily accommodate the entire population at the rate of three persons per automobile, but this will leave none to act as traffic policemen or as attendants of the soft drink parlors and hot dog stands. Neither will the allotment of the entire population to the automobiles leave any one to use the two or three million airplanes predicted by Mr. Fokker, some of which may be able to carry as many as one hundred people.

FACILITIES FOR AIRPLANES AND AUTOMOBILES.

Now consider what it will be necessary to do in order to provide facilities for handling this vast navy of airplanes and the millions of automobiles.

The automobilists already complain that there is not enough room now, and, of course, twice as many automobiles will require nearly twice as much space on the highways.

In New York, there will be spent nearly six hundred thousand dollars for the construction of a municipal airport in Brooklyn.

Another item states that a certain airport will cost six hundred and fifty thousand dollars.

The mere preparation of the land and the installation of the necessary facilities, without taking into account the value of the real estate, appears to cost anywhere from two hundred and fifty thousand dollars to seven hundred thousand dollars.

A square mile is equal to six hundred and forty acres. Many of these airports are nearly as large as this, and some of those projected are still larger. Even an airplane ^{ship} seems to need something like a square mile of territory to maneuver properly in landing and in leaving the hangar.

Like other terminals, the airport to be effective must be located close to the business center of the city. The cost of such area, when donated by the municipality, is rarely referred to. Sometimes the property so assigned was intended for parks and recreational purposes and not for commercial enterprises. The field comprising the Chicago Municipal Airport is said to have a value of ten million dollars, according to the Chicago Association of Commerce.

Who is to furnish these ports? Are the cities to do it

at the cost of the taxpayers, and are they to furnish the facilities free of charge to the users, and if so, why? Is the National Government to continue to furnish free airways at the public expense, and if so, why?

Please bear in mind that in the report furnished by the Department of Commerce, the following statement is made,—

"In the eleven years of American air mail, 1918 to 1928, Congress has appropriated seventeen million six hundred and eighty-five thousand dollars for Government routes, and four million five hundred thousand dollars for contract routes. In addition, monies have been expended out of the allotments for foreign mail service (Alaska, New Orleans and Seattle routes)."

My understanding is that the National Government does not maintain airports, but has turned over to different municipalities the airports heretofore constructed at the expense of the Post Office Department. The fact that these airports and airways are being provided by municipalities or by Government indicates the vast difference in the sentiment surrounding the development of aviation and the legislation which restricted the development of the railways in the United States.

PREJUDICE AGAINST NEW "CONTRAPTIONS".

We like to think now that America is foremost in large transportation developments, and perhaps the prejudice against the new "contraption" was formerly no stronger here than in other countries, but the well known present attitude toward aviation can be better appreciated by reciting a few occurrences of the last century.

(a) When the Little Miami Railway was built to Cincinnati, it was forbidden to bring its locomotives into the city, and was forced to disconnect the cars from the engines and move the cars into the city by horsepower.

(b) When the Chicago & North Western was surveyed, it was forbidden to bring its rails into the city limits of Chicago at all.

(c) When the Eads Bridge was constructed across the Mississippi River, thereby connecting St. Louis with East St. Louis, the railroads were not able to use the bridge, because the east side lines were, by law, limited to operation in Illinois, while the west side lines were likewise restricted to Missouri, and the Bridge Company immediately went into receivership.

(d) When the Erie Railroad was chartered, it was required to locate both termini within the State of New York, and was forbidden any association with a railroad in New Jersey.

Doubtless it was such circumstances as these that lead Captain Rickenbacker to say, in a recent interview,—

"Aviation will melt national borders. Aviation, radio and television will link every part of the earth in common understanding, common business enterprises, common prosperity."

"NOTHING NEW UNDER THE SUN."

Solomon was credited with the statement that there was nothing new under the sun, and while a great many Americans have derided this statement as indicating that Solomon had no vision of the future, I think, upon careful analysis, you will agree that his comment was entirely correct.

The principles and basic ideas of life have not changed since that time. We are born and we die, and in the interval we eat and drink and sleep; we provide clothing and habitation; we provide amusement and work; we indulge in display; and we mingle with each other in companionship and friendly association, or we engage in wars; we select rulers only to later on change them for other rulers; I cannot see wherein these general condi-

tions are in any way different from what we know of the conditions in King Solomon's reign.

It is merely the details surrounding these basic conditions which change, and our difficulty is to take on a new idea in which a new detail is set out without clinging to the old ideas and the old details.

An ocean liner is referred to as a floating "palace" merely because we cannot get away from the thought of a building on land in order to describe a building on the sea.

Some of the war vessels of the Seventeenth Century were fitted out with balconies, with windows and doors opening on the balconies so that they looked more like a dwelling than a vessel.

When the first railroad passenger cars were designed, it was impossible to get away from the design of the "coach" drawn by horses.

When the experimental state of the automobile had passed and it became possible to construct machines with a reasonable certainty that they would be able to reach their destinations, the designers were unable to give up the idea that they were merely putting a piece of propelling machinery into a vehicle generally drawn by horses, and while the design was modified slightly, the general appearance of the automobiles even less than twenty years ago contained a suggestion more or less definite that the automobile was a converted phaeton or coach. Some of them went by the name of "gas buggy".

When we began to use steel in place of wood, it seemed impossible to get away from the temptation to imitate with paint on steel the grain of the wood to which we had become so well accustomed. Some manufacturers went so far as to print the steel surfaces with an impression taken from a piece of wood.

Now, we are entering into an era in which steel is

known as steel, but the manufacturers called it an "age of color". The simple fact is that they have finally succeeded in breaking away from the idea that steel must look like wood.

Even our desire to be "air-minded" may be the lingering recollection of the period when the forerunners of the human race used to swing by their hands in trees.

You have seen photographs of the new submarine equipped with a compartment for a small airplane which can be flown from the deck and used for reconnoitering purposes.

Even this has its precedent, because I would remind you that when Father Noah became tired of floating around in the ark, he first sent forth a Raven, which did not return, and then he sent forth a Dove, but as the Bible says,—

"The Dove found no rest for the sole of her foot, and she returned unto him into the ark."

After waiting another seven days, he sent forth the Dove again, and again quoting from Genesis,—

"The Dove came into him in the evening and lo, in her mouth was an olive leaf pluckt off: so Noah knew that the waters were abated from off the earth."

Even the Navy found it difficult to get away from old traditions. You will recall that the Steamship "Savannah" made the trip across under steam in twenty-five days in 1819, but the first important United States steam-driven naval vessel built without provision for sails was the "Monitor", which was commissioned in 1862. Even this instance is hardly applicable, because of the peculiar circumstances under which the "Monitor" was designed and constructed.

As late as 1882, at the bombardment of Alexandria, British warships still carried masts and sails, and in a recent work on the British Navy, the author calls at-

tention to this fact and states that the sails were thought necessary before the Navy "had accustomed itself to reliance on steam".

A few steam-driven naval vessels of the gunboat class, commissioned by the United States in 1897 and still in service for training, carry sails for auxiliary power. Full dependence on steam propulsion for naval vessels in general may be said to date from about 1890, as the result of service experience with the vessels of "The White Squadron". (Secretary of Navy.)

The experience of the world demonstrates that man's progress must be gradual, and if some ambitious and audacious soul tries to jump way beyond the limits of experience, history shows that a failure is the result.

When the "Great Eastern" was conceived, she was the wonder of the world. She was an eighth of a mile long and had so many engines that most of the space in the hold was taken up with coal to run the engines, so that the cargo space was limited to an unprofitable degree. She was so large that she could not enter the New York Harbor except at high tide, and even then with danger. She was a step too far in advance of the life of that day, and her only useful performance was laying the Atlantic cables.

Many of the deaths that have occurred in aviation since the war have been the result of stepping beyond the safe limits of experience and discretion. Perhaps some of those who survive have learned something from these accidents. I doubt it. An accident may be the result of defect and may impress the survivors that it is necessary to guard against defective material and defective workmanship, but the death was not necessary to teach this lesson.

I have already said that with the possible exception of the private automobile, I do not believe that the air-

plane is a substitute for any of the other means of transportation.

SPEED OF AIRPLANE.

One reason for this belief is the extraordinary speed of the airplane. The actual record is over three hundred and eighteen miles per hour, and it is reported that a plane is being designed which will accomplish three hundred and sixty miles per hour. There is, therefore, some basis for a recent statement that,—

"An airplane that travels at but one hundred miles an hour already is obsolete." (Captain Rick-enbacker.)

The speed of the airplane is so great that a camera fitted with the ordinary shutter could not be used to take a photograph from the air, because the airplane overtook, so to speak, the working of the shutter, and it was necessary to devise a new kind of shutter in order to function properly in taking this new kind of photograph.

You will recall that in the story of the first race for what is now known as "America's Cup", the Queen of England was much interested, and at the conclusion of the race asked which yacht came in first; the answer was,

"The 'America', your Majesty";

"And which was second?"

"Your Majesty, there was no second."

POSSIBILITIES OF AIRPLANE.

In the same way, as to the airplane in respect to some of its possibilities, there is actually no "second". Some of these are,—

(a) Aerial photography, in use by industrial companies, railroads, electric power companies, municipalities, and in the sale of land. In the photograph taken of Manhattan Island by the Fairchild

Company, the photograph developed that the city map was inaccurate and that one park was about four hundred feet out of place.

(b) Dusting fruit trees, cotton and other vegetation to eliminate or prevent injury from insects.

(c) Collecting spores at great altitudes. This work consists mainly in the exposure of slides at different altitudes and at different locations. By this means an attempt is made to locate, from altitudes as great as 5,000 feet, the date of the earliest appearance of rust spores, the region over which they first appear and any other data of interest.

(d) Survey of devastated regions, as in the case of the great floods in the Mississippi Valley and New England.

(e) Forest patrol, and in carrying forest fire fighting equipment.

(f) Photographs from which may be prepared accurate contour maps.

(g) In furnishing transportation service between two points separated by country so rough that no other means of transportation is available or even possible.

(h) The furnishing of extraordinarily expedited service for special matters, such as pictures of events. Although, in the matter of photography, telephotography is outstripping everything else. It is perhaps hardly necessary to remind you of the special trip made by Colonel Lindbergh in transporting serum to Canada in the hope of relieving Floyd Bennett.

There are many other uses to which the airplane is put, some of which are merely stunts, and I have very little use for the latter.

SAFETY.

I can say nothing about the safety of flying. Perhaps the accidents are becoming less in proportion to the amount of flying, but the numerous fatalities reported

in the daily papers, some times two or three in one issue, do not give that impression.

It has been stated that the main causes of accidents are five in number; namely,—

- (a) Loss of control.
- (b) Engine failure.
- (c) Structural failure.
- (d) Collision.
- (e) Weather.

The first one; namely, loss of control, is, I suppose, a euphonious way of explaining accidents caused by foolhardiness, attempts to perform unusual feats, general inexperience, and loss of nerve.

It was rather interesting to read the two accounts of the "Bremen" leaving Ireland. In one, a flock of sheep, and in the other, a poor little lamb were given as the cause of a near accident. In one New York paper, it was stated that the lamb got in the way, but by skillful maneuvering the airplane just cleared the animal. In the account of the same take-off, under the same date line but in another New York paper, the statement was made that the airplane plowed through the flock of sheep, which had been left in the way through the "carelessness of the farmer", and scattered their dismembered bodies on every side. Inasmuch as the airplane reached Greenly Island, you can draw your own conclusions as to the accuracy of the second report.

AIRPLANE: SEPARATE FORM OF TRAVEL.

While the airplane may be a substitute for the private automobile, it cannot, in my opinion, be a substitute for the railroad trains or for the steamships. It is and always will be a separate kind of transportation, suitable

to peculiar needs and peculiar conditions, and will fill a gap in the transportation system of the world that nothing else can do at this time.

The airplane enjoys a peculiar freedom from robberies and hold-ups; while, on the other hand, we know that even in the limits of Chicago, passenger trains are held up by bandits, and we read that in the country and suburban districts buses and automobiles are robbed by highwaymen.

DEVELOPMENT OF COUNTRY.

The Country is indebted to the railroads for the development of the industrial centers and of the farm lands. The automobile is contributing to this development. Will the airplanes be of substantial value in the same direction?

The population of the United States is increasing rapidly, while the farm population is decreasing, so that the congestion in the industrial centers is becoming greater. This makes the acquisition of land for airports of still greater difficulty, which perhaps, however, can be solved in another way.

GOVERNMENT EXPENDITURES AND SUPERVISION.

If we have spent in developing the highways of this Country something like twenty billion dollars, with a prospect of spending additional millions every year; if we are to spend a billion dollars in developing the Mississippi River; and if the airports are becoming more and more costly, would it not be well to consider a general scheme for developing all transportation terminals under one general plan?

Of course, this involves the danger of Government

ownership and control. As Dr. Payne has recently said,—

"When the Government assumes control of any industry, the leaders of that industry forthwith must become either a part of Government or an enemy of Government."

At the present time, we have this situation,—

(a) The Shipping Board boats have been provided at Government expense.

(b) A barge line is operated on the Mississippi River and the Warrior River under the direction of the Secretary of War, and at Government expense.

(c) The Panama Canal, the New York State Barge Canal, and many of the smaller canals have been provided by the National or the respective State Treasuries.

(d) All the ports on the Great Lakes, all the ports on the Atlantic, Pacific, and Gulf coasts are maintained by Government.

(e) A large part of the highways of the Country have been paid for out of the National Treasury.

(f) Some of the airports and all of the airways have been improved at Government expense, and the remainder of the airports have usually been provided at municipal expense.

(g) The navigable rivers have been improved and are being maintained at Government expense, and some of the rivers not naturally navigable are to be deepened so as to become canalized streams, and all at Government expense.

The policy of the National Government in the direction of airplane development is outlined by Secretary Hoover in a recent article.

"Our plan has been that a sound transportation agency must be developed by private enterprise without Government subsidy; that the Government support should be given only so far as we have for one hundred years given it to navigation.

"This translated into aviation, means that the

Government declares the routes of national airways, builds their equipment of lights and emergency landing fields, furnishes charts, licenses planes for safety and the aviators for competence, engages itself in scientific investigation, and promotes and co-operates with private and local enterprises to do the rest."

GENERAL PLAN NEEDED.

We are inclined to let our enthusiasm force a kind of incomplete specialization on the matter of the moment, and we thereby lose sight of the fact that general development will contribute more to the happiness and comfort than will a spurt in one direction only.

We need to only consider the unrest prevailing in Russia, China, and in India to appreciate what the lack of proper transportation facilities means to a nation. The more perfect the transportation facilities of a country, the further the individuals of that country are removed from barbarism.

With all our energy along specialized lines, we have not taken a large enough view of transportation as a whole. It is true that we have a mania for regulation and interference.

We have State public utility bodies and we have the Interstate Commerce Commission. We have park commissions, bodies of city aldermen or town councilmen and we even have the village board of improvement and city beautiful organizations.

The Interstate Commerce Commission and the State utility commissions, assisted or interfered with by local boards, regulate the railroads, and these will probably later on regulate the motor bus and the motor truck, and as we have learned to-night, a start has been made in the regulation of interstate air commerce.

So far, no control is exercised over the coastwise water

borne commerce of the United States, except in a slight degree by the Interstate Commerce Commission on joint rail and water rates and in a still slighter and more indefinite degree by the Shipping Board.

No control is exercised over the strictly port to port service on the Great Lakes or on the rivers or on the canals, but this forbearance is exercised because it is thought that by permitting free functioning of the vessels on the lakes, rivers and canals some kind of a corrective competition with the rail carriers will be set up.

We talk a great deal about co-ordination of all transportation facilities, but we do very little about it. Certainly, no Governmental body has taken up this question in any broad effective way.

It is the duty of the Department of Commerce to foster the development of air commerce in the United States. It is the duty of the Interstate Commerce Commission to foster and maintain, in full vigor, the land and water transportation of the United States, but unfortunately the word "foster" has been overlooked, at least as to the older means of transportation, and I do not yet know what it will mean in connection with aviation.

The Interstate Commerce Commission are so fully occupied in correcting the troubles brought directly to the attention of the Commission that they have no time to consider the broader aspects of transportation.

Regulation pure and simple may result in strangulation, and what this Country needs is a prosperous transportation system which will constantly develop so that every community, even to the most remote hamlet and distant farm, may be directly upon some line or some form of transportation.

ALASKA.

If you have never read the official reports on the development of Alaska from a transportation standpoint, you will be astonished to know that the efforts of the Interior Department^{and the} to develop the railroads and the highways have put the river service out of business and that there is no co-ordination between the highways and the railroads. This is the result of a crude attempt to develop a country without a comprehensive plan toward which to work.

NEW CABINET POSITION.

I have, before this, advocated the creation of a Government position of importance to be designated by any proper term, and the phrase that occurs to me is similar to the one that is used in Great Britain; namely, "Minister of Transport" or, again, "Minister of Transportation and Communication".

Such an officer should be a member of the Cabinet, and while not interfering with or usurping the duties and responsibilities of the Interstate Commerce Commission in the matter of regulation, such a member should take over all the duties in connection with transportation now handled by other Cabinet officers, and thus be able to advise the President of the relative merits of the different proposals that are necessarily brought to his attention.

Briefly, it would be the duty of such Cabinet officer, as Minister of Transportation and Communication, to be at all times vigilant in the direction of a general development of all the existing and possible transportation facilities; one of the essential features of such development to be the outstanding thought that all transporta-

tion facilities must be harmonious one with the other and with the scheme as a whole, and thus lead to a greater prosperity of the entire United States. I am convinced that this cannot be done under our present plan, which encourages division of responsibility, and my proposal is probably different from what we have been discussing recently, but, in my opinion, this Nation could take no more important step forward in national transportation development than to adopt as a principle that a complete and prosperous piece of transportation machinery is necessary to the prosperity of the United States.

JOINT TERMINALS.

A second thought that I would like to leave with you is in the matter of terminals.

I have always been disposed in favor of consolidating rail terminals at all important points and of consolidating rail and water terminals at all ports.

I now go a step further and suggest that in view of the large interest which Government (National, State and municipal) has taken and will continue to take in the separate means of transportation and in the terminals connected with all forms of transportation, excepting railroads, that the time has come for a complete co-ordination and even consolidation of the necessary terminals for the proper functioning of the railroads, airplanes, motor vehicles, and including the terminals for water service at all points on navigable waters.

Such a plan, properly protected, would permit the National Government to take over and pay for all such terminals and by rearrangement and by new construction provide at each important point a complete system of terminal facilities. This would be merely applying as to terminals and in a concrete way, under Government responsibility, the complete co-ordination of all facilities

of transportation, as recommended in the findings of the Interstate Commerce Commission, previously quoted.

Under such a plan, the terminal buildings and facilities serving the buildings could be so arranged as to provide landing stages for the different kinds of airplanes, airships, etc. which will be developed in air commerce and communication.

The economy of such joint terminals, I think, is perfectly manifest, because we are all impressed with the knowledge that the present system of disconnected and competitive terminal expenditures are adding to the cost of transportation and, in the long run, are not benefiting the public.

As Longfellow has said in "Keramos",—

*"All things must change,
Nothing that is can pause or stay;
The moon will wax, the moon will wane,
The mist and cloud will turn to rain,
The rain to mist and cloud again;
Tomorrow be today."*

**END OF
TITLE**